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PCT/EP2003/003219

Translation

PATENT COOPERATION TREATY

PCT

04 Sept. 05

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 40 928.:.sev	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP2003/003219	International filing date (*day/month/year*) 28 March 2003 (28.03.2003)	Priority date (*day/month/year*) 28 June 2002 (28.06.2002)
International Patent Classification (IPC) or national classification and IPC C23C 2/02		
Applicant SMS DEMAG AKTIENGESELLSCHAFT		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
20 December 2003 (20.12.2003)	03 September 2004 (03.09.2004)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/003219

I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed

☒ the description:

pages _____, as originally filed
pages _____, filed with the demand
pages 1-3, filed with the letter of 06 August 2004 (06.08.2004)

☒ the claims:

pages _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages 1-5, filed with the letter of 06 August 2004 (06.08.2004)

☐ the drawings:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

V. **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	2, 4, 5	YES
	Claims	1, 3	NO
Inventive step (IS)	Claims		YES
	Claims	1-5	NO
Industrial applicability (IA)	Claims	1-5	YES
	Claims		NO

2. Citations and explanations

1. Reference is made to the following documents:

D1: JP-A-11 279 730
D2: JP-A-07 180 014
D3: US-B1-6 224 692.

2. Document D2 was not cited in the first written report. A copy of the document is appended.

3. The present application does not comply with the requirements of PCT Article 33(1), because the subject matter of claims 1, 3 is not novel within the meaning of PCT Article 33(2).

3.1 D1 discloses (the references in parentheses are to D1): a method for suppressing the zinc evaporation and oxidation in the hot dip coating of steel strip with zinc, in which method a heavy gas such as Xe (specific gravity 4.55; thermal conductivity (1.0136 bar and 0 °C) 5.1 W/(m.K), Rh (specific gravity 7.70), Kr (specific gravity 2.89; thermal conductivity (1.013 bar and 0 °C) 8.8 W/(m.K); SF6 (specific gravity 5.11; thermal conductivity (1.013 bar and 21 °C) 12.058 W/(m.K) is injected into the furnace blowpipe over the surface of the metal bath.

Other inert gases used, such as argon (specific gravity 1.38; thermal conductivity (1.013 bar and 0 °C)

16.35 W/(m.K), or nitrogen (specific gravity 0.96; thermal conductivity (1.13 bar and 0 °C) 24 W/(m.K), in contrast to the application, do not suppress the oxidation and evaporation of zinc (see page 2, first paragraph). The thermal conductivity of the gases used is generally low.

3.2 D2 discloses a method for suppressing the evaporation of zinc from a zinc bath in the hot dip coating of steel strip with zinc, in which method nitrogen (gas) is injected into the furnace blowpipe over the surface of the metal strip.

4. The present application does not comply with the requirements of PCT Article 33(1), because the subject matter of claim 2 does not involve an inventive step within the meaning of PCT Article 33(3).

D3 discloses a method for the hot dip metal coating of a steel strip in which a protective atmosphere consisting of a mixture of hydrogen and nitrogen is introduced in the inert gas inlet region, above the inert gas (see figure 1; column 4, lines 11 to 20, 61, 62).

5. The present application does not comply with the requirements of PCT Article 33(1), because the subject matter of claims 4, 5 does not involve an inventive step within the meaning of PCT Article 33(3).

The above-mentioned gases, all of which should meet the requirements set, have a thermal conductivity between 8.58 W/(m.K) (sulphur dioxide) and 32.81 W/(m.K) (disilane). Examples: propane 15.198 mW, butane 13.6 W/(m.K), acetylene 18.51 mW, boron trifluoride 17.28 W/(m.K), hexafluoroethane 13.47 W/(m.K).

Many of the gases mentioned in claim 4 have a specific gravity > 2. For example, butane 2.07; sulphur dioxide 2.26; arsine 2.69; boron trichloride 4.05; dichlorosilane 3.48; hexafluoroethane 4.77; tungsten hexafluoride 10.29.

6. The composition (page 6) contains gases other than those mentioned in claim 4.